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ABSTRACT

In fall 1996, Maryland's Prince George's Community College (PGCC) undertook an analysis of the number of underprepared students enrolled the college and their academic progress. Findings, based on outcomes for 1,596 students entering PGCC in fall 1996 who completed placement tests in reading, English composition, and mathematics, included the following: (1) 67% of the students needed remediation in at least one area, while 21% needed remediation in all three areas; (2) the percentage of the students needing remediation in mathematics was 57%, down from 61% in 1995; (3) 30% of the students needed remediation in reading, compared to 31% of the fall 1995 students, while 36% needed remediation in English composition, compared to 35% in fall 1995; (4) from fall 1992 to fall 1996, only 15 to 17% of PGCC's credit students were enrolled in developmental courses; (5) in fall 1996, enrollment in developmental courses generated 9,800 equated credit hours, or 11% of total college hours; (6) of the 2,387 degree-seeking students who entered PGCC in fall 1990, 28% had attained achiever status (i.e., graduated, transferred, or attained sophomore status in good standing) after 4 years; and (8) 28% of these students who needed remediation in one area attained achiever status, compared to 17% of those needing remediation in two areas, and 11% of those needing remediation in three areas. (HAA)

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Underprepared Students

Enrollment and Achievement at PGCC

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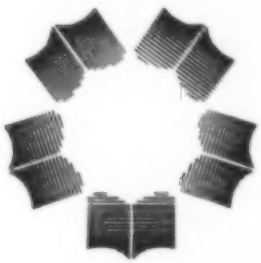

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Enrollment Analysis EA97-3

November 1996

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Office of Institutional Research and Analysis

UNDERPREPARED STUDENTS: ENROLLMENT AND ACHIEVEMENT AT PGCC

Enrollment Analysis EA97-3
November 1996

Introduction

Community colleges are the great American experiment in higher education. Emphasizing opportunity through their open-admissions policies, community colleges encourage higher learning among many students lacking the basic skills, study habits, and support networks that facilitate success. Many community college students are the first in their families to attend college, and the transition to college is social and cultural as well as academic. At Prince George's, surveys suggest that about two-fifths of the college's students are first-generation students. A majority of the students entering PGCC each fall need remediation in at least one of the basic skills of reading, English composition, or mathematics. This enrollment analysis examines data concerning the number of underprepared students attending PGCC, enrollment in developmental education courses, and the academic progress of underprepared students.

Basic Skills Deficiencies among Entering Students

Two-thirds of the students entering PGCC in Fall 1996 who completed the placement test battery in all three skill areas (reading, English composition, and mathematics) had test scores indicating a need for remediation in at least one area. A fifth of the tested students needed remediation in all three areas:

Remedial Needs of Fall 1996 Entrants Tested in All Three Skill Areas		
Tested in all three areas	1,596	100%
No remediation needed	531	33%
Remediation needed	**1,065**	**67%**
In one area	466	29%
In two areas	270	17%
In three areas	329	21%

The proportion of students needing remediation in at least one area was 67 percent, a decline of three percentage points from fall 1995:

Percent of Entering Students Tested in All Three Skill Areas Needing Remediation in at Least One Area		
	Tested in All Three Skill Areas	Percent Needing Remediation
Fall 1996	1,596	67%
Fall 1995	1,866	70%
Fall 1994	1,800	72%
Fall 1993	1,913	70%
Fall 1992	1,841	71%
Fall 1991	1,923	66%
Fall 1990	2,081	60%

Two out of every three students entering PGCC need developmental coursework. Which area--reading, composition, or mathematics--is in greatest need? Since 1992, marking the implementation of the Descriptive Tests of Language and Mathematics Skills as the college's placement test battery (replacing the Comparative Guidance and Placement Tests), mathematics has been the area of greatest remedial need among entering students. At the time of test crossover from the CGP to the DTLS tests, an effort to establish equivalent threshold scores for determining the need for remediation was made based on a regression analysis of test scores of a pilot group of students who had taken both test batteries. The process was different for mathematics. A committee of math faculty reviewed the new DTMS test, item by item, to determine what skills should be required for students entering math classes with an algebra pre-requisite. Thus, the new threshold for mathematics probably reflected a changed standard.

The percentage of entering students needing remediation in mathematics declined from 61 percent in fall 1995 to 57 percent in fall 1996. The proportion of students needing developmental reading has been declining steadily, though modestly, over the past five years. Three in ten new students needed remediation in reading. The percentage of new fall 1996 students needing developmental English was essentially unchanged at 36 percent.

Percent of Students Tested in Each Skill Area Needing Remediation, Fall 1992-1996					
	1992	1993	1994	1995	1996
Mathematics	60% (1,996)	57% (2,090)	63% (1,963)	61% (2,034)	57% (1,758)
Reading	35% (1,919)	34% (2,029)	32% (1,954)	31% (1,988)	30% (1,878)
English	36% (1,935)	33% (2,030)	35% (1,887)	35% (1,937)	36% (1,840)

It is clear, given current score cutoffs, that mathematics is the skill area that entering students are most deficient in. Course pass rates support this, as classes in mathematics, and courses needing mathematics such as chemistry, have traditionally been the most difficult for PGCC students.

Remedial Needs of County High School Graduates

The prior section examined placement test findings for all new entrants to the college. In this section, the developmental needs of graduates of the county's high schools are reviewed. Nearly two-thirds of the entering high school graduates in fall 1996 who completed the placement test battery in all three skill areas (reading, English composition, and mathematics) had test scores indicating a need for remediation in at least one area. A fourth of the tested students needed remediation in all three areas:

Remedial Needs of 1996 County High School Graduates Entering PGCC Tested in All Three Skill Areas		
Tested in all three areas	860	100%
No remediation needed	300	35%
Remediation needed	**560**	**65%**
In one area	215	25%
In two areas	139	16%
In three areas	206	24%

The proportion of students needing remediation in at least one area was 65 percent, down two percentage points from fall 1995 and six percentage points from the all-time high of 71 percent in fall 1994:

Percent of High School Graduates Tested in All Three Skill Areas Needing Remediation in at Least One Area		
	Tested in All Three Skill Areas	Percent Needing Remediation
Fall 1996	860	65%
Fall 1995	950	67%
Fall 1994	886	71%
Fall 1993	945	68%
Fall 1992	926	68%
Fall 1991	908	66%
Fall 1990	1,037	57%

The percentage of entering high school graduates needing remediation in mathematics remained unchanged at 53 percent. The proportion of students needing developmental reading declined three percentage points in fall 1996. The percentage of new graduates needing developmental English was unchanged from fall 1995:

Percent of High School Grads Tested in Each Skill Area Needing Remediation, Fall 1992-1995					
	1992	1993	1994	1995	1996
Mathematics	54% (957)	58% (976)	61% (901)	53% (989)	53% (888)
Reading	39% (944)	42% (952)	39% (899)	39% (966)	36% (887)
English	38% (941)	39% (959)	39% (896)	41% (963)	41% (882)

Enrollment in Developmental Courses

With two-thirds of entering students in need of basic skills remediation according to the college's placement testing, is PGCC becoming a remedial education institution? In terms of total instructional activity, the answer is no. In recent fall terms, 15 to 17 percent of the college's credit students have been enrolled in developmental courses. Thus, in any given semester, one in six students would be taking a developmental class.

Number and Percent of Students Enrolled in Developmental Courses
Fall 1992 - Fall 1996

Developmental Courses	Fall 1992	Fall 1993	Fall 1994	Fall 1995	Fall 1996
One	1,455	1,560	1,524	1,538	1,326
Two	417	410	388	431	351
Three	105	105	110	122	95
Number taking developmental course(s)	1,977	2,075	2,022	2,091	1,772
College headcount	13,318	12,955	12,201	12,050	11,696
Percent taking developmental course(s)	14.8%	16.0%	16.6%	17.4%	15.2%

Among the five-sixths of the college's students not enrolled in developmental classes in a given term are students who have completed developmental, those with test scores indicating no need for remediation, and those identified as needing remediation but not currently enrolled in developmental classes. A later section of this report uses longitudinal cohort analysis to examine student coursetaking patterns and academic progress. The purpose of this section on developmental education enrollment is to document the scope of remedial instruction within the context of total college credit enrollment.

This fall, 817 of the 2,244 first-time students at PGCC (or 36 percent) enrolled in a developmental education class. Most were taking one developmental course, although 78 first-time students were enrolled in three remedial classes:

Number and Percent of First-time Students Enrolled in Developmental Courses Fall 1992 - Fall 1996					
Developmental Courses	Fall 1992	Fall 1993	Fall 1994	Fall 1995	Fall 1996
One	554	572	566	508	475
Two	298	301	277	317	264
Three	80	86	86	103	78
Number taking developmental course(s)	932	959	929	928	817
Total first-time	2,730	2,574	2,401	2,397	2,244
Percent taking developmental course(s)	34.1%	37.3%	38.7%	38.7%	36.4%

Student enrollment in developmental courses in fall 1996 generated 9,800 equated credit hours, or 11 percent of total college hours. Total developmental hours were down over 16 percent from fall 1995. Decreased hours in developmental mathematics accounted for four-fifths of the decline. Changes in math course offerings and sequencing probably contributed to the drop. Statewide efforts to define general education competencies acceptable to all Maryland colleges and universities prompted PGCC math faculty to enhance MAT 112, so that it is now based on intermediate as opposed to elementary algebra. This meant that all students leaving developmental math must now take one of two new credit intermediate algebra courses, MAT 101 or MAT 102, neither of which satisfy the general education math requirement, prior to taking MAT 112, MAT 125, or other transfer-level math. The curriculum committee approved DVM 004 as a prerequisite for MAT 101, so students in programs other than business administration, computer science, engineering, and engineering technology (which require MAT 102) no longer need DVM 006 or DVM 007. As a result, enrollments in DVM 006 and DVM 007 dropped by over 60 percent as students enrolled in MAT 101 instead. (Developmental students pursuing technology or calculus-based programs must still complete DVM 006 or DVM 007 to enter MAT 102.) In short, many students placed into DVM 004 can qualify for credit math by completing just that one developmental course. The decline in developmental math hours was accompanied by 388 enrollments in 17 sections of the new credit course MAT 101, generating 1,164 credit hours in fall 1996.

Equated Credit Hours in Developmental Courses Fall 1992 - Fall 1996					
Developmental Area	Fall 1992	Fall 1993	Fall 1994	Fall 1995	Fall 1996
Mathematics	6,124	6,600	6,588	7,100	5,496
Reading	2,551	2,474	2,428	2,472	2,176
English	1,732	1,700	1,504	1,492	1,580
Learning Support	704	700	588	696	548
Total DVM, DVR, DVE, and DLS hours	11,111	11,474	11,108	11,760	9,800
Collegewide hours	96,762	94,119	87,544	87,422	87,490
Percent total hours in developmental course(s)	11.5%	12.2%	12.7%	13.5%	11.2%

Developmental Education and Student Achievement

How does the need for remediation affect outcomes? PGCC's research office has developed a typology of student outcomes based on longitudinal cohort analysis that summarizes the progress after a set number of years of students entering PGCC in a given fall semester. Students are classified according to the following scheme:

1. **Award and transfer.** The percentage of degree-seeking students in an entering cohort who have earned a degree or certificate from the community college *and* transferred to a four-year college or university within the study period.

2. **Transfer/no award.** The percentage of degree-seeking students transferring to a senior institution without having earned an award from the community college.

3. **Award/no transfer.** The percentage of degree-seeking students earning a degree or certificate from the community college for whom there is no evidence of transfer.

4. **Sophomore status in good standing.** The percentage of degree-seeking students who have not graduated from the community college but who have earned at least 30 credits with a cumulative grade point average of 2.0 or above, and for whom we have no evidence of transfer. Given the proportions of entering students needing remediation and/or attending part-time, reaching sophomore status in good standing represents a notable academic achievement. Probably included in this category are a number of students who have transferred to independent and out-of-state colleges or universities.

5. **Achievers.** A summary measure of the preceding four categories.

6. **Persisters.** The percentage of degree-seeking students still enrolled at the community college (as of the last term of the study period) who do not fall into any of the above "achiever" categories. They have not graduated or transferred, nor have they earned 30 credits with a 2.0 grade point average. Their outcomes are yet to be determined.

7. **Non-achievers.** The percentage of degree-seeking students exiting the community college without graduating or earning 30 credits in good standing for which we have no evidence of transfer. Included in this group are the true "dropouts" who have not succeeded in reaching their goals within the study period. Some of these students may have transferred early (before accumulating 30 credits) to independent or out-of-state colleges.

8. **Special motive.** Students who had indicated short-term, non-degree goals of personal enrichment or job skill upgrading *and* who attended only during the first two terms of the study period. Never intending to enter a curriculum or transfer, these students are properly excluded from attrition statistics.

The research office has used the above typology to study the progress of students entering the college in fall 1990. Of the 2,643 first-time college students entering PGCC in fall 1990, 256 had short-term, non-degree goals ("special motives") and are excluded from the following analyses. Of the 2,387 degree-seeking students, 665 or 28 percent had graduated, transferred, or attained sophomore status in good standing after four years. This achievement rate varied depending on student basic skill levels at entry to the college. Earlier research office studies had found that students needing remediation in mathematics and at least one other area--reading or English composition or both--were most "at risk" of not succeeding. The fall 1990 cohort analysis confirmed this finding. Only 11 percent of the students identified as needing developmental courses in mathematics and at least one other area were classified as achievers after four years. In contrast, students with no developmental needs achieved at a rate of 45 percent. Adding in persisters--students enrolled at PGCC the last term of the study period--found half of the students not needing remediation successful, compared to only 20 percent of the "developmental math

plus" group. Among full-time students, 56 percent of the non-developmental group--compared to 17 percent of the developmental math plus group--had graduated, transferred, or attained sophomore status in good standing within four years.

Student Outcomes After Four Years, by Developmental Need Outcomes as of the End of Spring 1994 of Students Entering in Fall 1990				
	No Developmental Needed		Developmental Math Plus	
Outcome	Total	Full-time	Total	Full-time
Award and transfer	4%	7%	<1%	1%
Transfer, no award	17%	24%	2%	4%
Award, no transfer	5%	6%	1%	2%
Sophomore w/2.0+ GPA	18%	19%	7%	9%
Achievers	45%	56%	11%	17%
Enrolled Spr 94 <30 credits/2.0	5%	4%	9%	7%
Non-achievers	50%	40%	80%	76%
Total degree-seeking students (100%)	861	536	628	281

Achievement levels varied by the number of skill areas needing remediation. Twenty-eight percent of the students needing remediation in only one basic skill had graduated, transferred, or attained sophomore status in good standing within four years of entry to PGCC. Achievement rates dropped to 17 percent for those needing developmental in two areas, and 11 percent for those needing developmental classes in all three areas of mathematics, reading, and composition. Clearly, the extent of need for developmental education influences credit accumulation and academic achievement.

Achievement After Four Years and Developmental Status Percent Graduating, Transferring, or Attaining Sophomore Status Fall 1990 First-time Student Cohort			
	Number of Students	Percent of Cohort	Percent Achievers
BASIC SKILLS ASSESSMENT (n = students tested in all 3 areas)			
No developmental courses needed	861	42%	45%
Developmental courses needed	**1,170**	**58%**	**18%**
In one area	390	19%	28%
In two areas	380	19%	17%
In three areas	400	20%	11%
DEVELOPMENTAL PROGRESS (n = students identified as needing developmental)			
No developmental courses taken	262	22%	21%
Dev. courses taken/none passed	214	18%	4%
Course(s) passed/no area completed	198	17%	11%
Some, but not all areas completed	315	27%	15%
All developmental work completed	**181**	**16%**	**46%**

Achievement also reflected student progress through recommended developmental courses. A fifth of the students initially identified as needing remediation by testing did not take developmental courses, due to early attrition, avoidance, waivers granted by counselors, or through re-testing. These students attained an achievement rate of 21 percent, compared to 45 percent for students not needing remediation. Students who took developmental courses but failed to pass them had an achievement rate of 4 percent. Students passing at least one developmental course, but not completing required remediation in any skill area, had an achievement rate of 11 percent. Fifteen percent of the students completing remediation in at least one skill area, but not all skill areas of need, achieved. Most notably, 46 percent of the students needing remediation who completed all developmental work recommended achieved. While only accounting for 16 percent of the students needing remediation, these developmental completers achieved at the same rate as students not needing developmental courses.

Support Programs for Underprepared Students

Prince George's Community College has a number of academic support services in place to assist students, including a tutoring center, vocational support services for students pursuing occupational programs, a writing center, and computerized learning laboratories. Two programs specifically target underprepared students, the ALANA minority student retention and transfer program and Student Support Services (SSS). ALANA (African, Latin, Asian, and Native American) students are offered services such as college orientation sessions, faculty or staff mentors, visits to transfer institutions, monthly newsletters, field trips, and referrals to other campus services. Originally open to any minority student, starting in fall 1992 ALANA targeted students new to the college with basic skills deficiencies in at least two areas. Student Support Services targets low income, first generation college students and those with physical and learning disabilities. SSS activities are designed to help students build confidence in their own abilities and worth, improve their academic and personal growth, and plan their educational and career development with realism and decisiveness.

There is mounting evidence that these targeted support services contribute to student persistence and achievement. A research office evaluation of ALANA (*The ALANA Minority Student Retention and Transfer Program: First-time College Students in ALANA Fall 1991 through Spring 1995*, report PE97-1) found that ALANA participants earned as many credit hours, had higher retention rates, and were more likely to earn an award or transfer, than minority students not participating in the program. Participation was not related to student grade point averages. A study of SSS (*The Academic Impact of Student Support Services Program Participation in Fiscal Year 1996*, report PE97-2) found student performance enhancements similar to ALANA. Compared to non-participating students, SSS students earned more credits and were more likely to graduate or transfer. While methodological and data limitations prohibit definitive conclusions, both studies suggest that student support programs involving sustained personal attention and multiple services can enhance the persistence and achievement of underprepared students.

Summary

Among the major challenges facing PGCC and most other community colleges is the large number of students enrolling who are underprepared for college study. While students may be "at-risk" for a number of reasons including family and employment circumstances, deficiencies in the basic skills of reading, composition, and mathematics constrain the academic progress of many community college students. This enrollment analysis was prepared to assess the breadth of basic skill deficiency among PGCC students, to determine what proportion of PGCC instruction was devoted to developmental education, to examine the impact of developmental

needs on student progress and achievement, and to review the efficacy of student support services targeted to at-risk students. Major findings can be summarized as follows:

- Two of every three students entering PGCC in the fall need remediation in at least one basic skill area.
- The percentage of new students needing remediation has declined for two consecutive years.
- Mathematics is the area of greatest deficiency, with a majority of entering students needing developmental math.
- One out of every six fall students is enrolled in a developmental class.
- Developmental courses accounted for 11 percent of total fall 1996 hours.
- Developmental math hours declined in fall 1996 due to the introduction of MAT 101 and associated course sequencing changes.
- Students entering PGCC with college-level skills are two and a half times more likely to graduate, transfer, or attain sophomore status in good standing than students needing developmental education.
- Students identified as needing remediation who complete all recommended developmental classes achieve at the same rate as students not needing remediation.
- Students participating in ALANA and Student Support Services persist and achieve at higher rates than non-participants.

Like many open-admissions colleges, PGCC will continue to enroll a large proportion of students underprepared for college study--but it is not becoming a remedial education institution. In a typical fall term, 15 to 17 percent of PGCC students will be enrolled in a developmental education class, and developmental education will account for 11 to 13 percent of total college hours. The real significance of the presence of developmental education is the basic skills deficiencies it signifies, and the hurdles these deficiencies place in the way of student progress and achievement. The welcome finding from the fall 1990 longitudinal cohort analysis--that students completing all necessary remediation achieved at the same level as students not needing developmental courses--is encouraging. Similarly, the findings that the ALANA and Student Support Services programs apparently enhance student achievement suggest that college actions can positively influence student outcomes. However, only 16 percent of the fall 1990 students needing remediation

completed their developmental coursework, and together ALANA and SSS are able to serve only around 500 students annually. Budgetary constraints make expansion of such programs--or introduction of promising concepts like the three-semester, cluster-scheduled, team-learning, multi-disciplinary *Freshman Academy*--problematic. The challenge of facilitating the academic success of underprepared students remains formidable.